To: Bronstein, Al[Al.Bronstein@rmpdc.org]; Mazda Shirazi[shirazi@pharmacy.arizona.edu]
Cc: Banerji, Shireen[Shireen.Banerji@rmpdc.org]; Dart, Richard MD[Richard.Dart@rmpdc.org]; SSmolinske@salud.unm.edu[SSmolinske@salud.unm.edu]; Poulet, Chris[Poulet.Chris@epa.gov]; Curry, Steven[Steven.Curry@bannerhealth.com]; Brooks, Daniel E[Daniel.Brooks@bannerhealth.com]; Welch, Sharyn[Sharyn.Welch@bannerhealth.com]
From: Keith Boesen
Sent: Wed 8/12/2015 2:03:32 AM
Subject: Re: News: Contamination in Animas River continues to decrease

Great information, thanks Al.

Mazda and I have been working with AZ Dept of Health and have a quick summary from those discussions.

They (ADEQ) will be testing water before and after the Glen Canyon Dam, the Dam that supports Lake Powell.

There is no evidence that the contamination has reached Arizona...yet, expected to arrive Wednesday.

Susan,

I will try to call you tomorrow, interested to hear what calls you are getting in the poison center and your experiences.

Chris,

If you have any information or plans that are specific to Arizona and the rivers that flow into AZ from the San Juan, that would be great.

We have had a few calls from concerned citizens and one from a small clinic asking about risk and potential for them to stock chelating agents.

We are certainly expecting more calls as Lake Powell is a large recreation area and that eventually flows into the Colorado which provides water for much of Arizona, especially Phoenix.

I have cc'd the Phoenix Poison Center on this email as well. (More introductions: Sharyn Welch, Dan Brooks, Steve Curry).

Thanks

Keith

Keith Boesen PharmD, CSPI
Director
Arizona Poison and Drug Information Center
520-626-6230
boesen@pharmacy.arizona.edu
www.pharmacy.arizona.edu/poisoncenter

From: Bronstein, Al <Al.Bronstein@rmpdc.org>
Sent: Tuesday, August 11, 2015 4:47 PM
To: Keith Boesen; Mazda Shirazi
Cc: Banerji, Shireen; Dart, Richard MD; SSmolinske@salud.unm.edu; Poulet.Chris@epa.gov
Subject: FW: News: Contamination in Animas River continues to decrease

Keith:

By way of introduction, Keith Boesen and Mazda are at the ARIZONA PC in Tuscon. Susan is at the New Mexico PC and Chris is with ATSDR. Rick, Shireen and me are at Rocky Mountain PC. I wanted to get everyone together and share some info with Keith who is beginning to receive a few calls in Arizona.

The press release below is the latest one from CDPHE. EPA and CDPHE has been testing the river water. Colorado had been seeing elevated levels of lead, cadmium, and manganese in the water.

So far we have had 2 calls - one a 56 y.o. man with diarrhea unrelated and 2 children that put their hands in the river and then ate with wet hands prior to washing. Children ASX

In addition Susan Smolinske sent the info below about the testing procedure NM PC is for individuals who drink the water. Chris Poulet at ATSDR and his team have been very helpful here in Colorado.

We can have further discussions as needed.

Sincerely,

Al
==========
-----Original Message-----
From: Susan C Smolinske [SSmolinske@salud.unm.edu]

Sent: Monday, August 10, 2015 08:03 PM Mountain Standard Time
To: Bronstein, Al
Cc: Barbara Crouch
Subject: Fw: Animas River Spill Ingestion Information

Al,

You may find these suggested lab tests useful. We are ordering them for our two patients who drank the water; turns out it was 1.5 liters each; thirsty after hiking. I am copying Barb as I think Utah will soon be in the path.

Susan

From: Wamsley, Miriam, DOH [mailto:Miriam.Wamsley@state.nm.us]
Sent: Monday, August 10, 2015 4:39 PM
To: Steven Seifert <SSeifert@salud.unm.edu>
Subject: Animas River Spill Ingestion Information

Dear Frank.

Thanks again for walking me through. Please let me know if I have this all right. Of the concentrations listed, not all of the results are from when the plume is present. Some of them are baseline data. Pages 5 and 6 are the initial concentrations total and dissolved. If you would like them in excel or shapefile form, we have those too.

Contaminants of concern related to humans who have ingested water from the Animas River: aluminum, antimony, arsenic, cadmium, chromium, cobalt, copper, lead, manganese, mercury and zinc. Of most concern is manganese. If exposed to this water as a drinking water source the following tests should be ordered as well as a comprehensive metabolic panel.

Contaminant	Blood	24 urine
Aluminum	X	
Antimony		x
Arsenic		X
Cadmium	X	X
Chromium	X	
Cobalt	X	
Copper	X	
Lead	X	
Manganese	X (whole blood)	X
Mercury		X
Zinc		X

Miriam Wamsley, MWR

Private Well Epidemiologist

Environmental Health Epidemiology Bureau

NM Department of Health

1190 St. Francis Drive, Suite N1305

Santa Fe, NM 87502

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BELOW IS THE TEXT OF THE ATSDR FAQS WRITTEN FOR San Juan Basin Health Dept (SJBHD) in Durango:

Chris Poulet

ATSDR Division of Community Health Investigations

ATSDR Region 8

1595 Wynkoop Street

MS-8ATSDR

Denver CO 80202

303 312 7013

cgp8@cdc.gov/Poulet.Chris@epa.gov

On August 7th 2015of the San Juan Basin Health Department (located in Durango, CO) (SJBHD) requested ATSDR provide "information for health care providers treating patients with exposure to the contaminated water along with general information for the public." On August 5th the mining waste from the Gold King Mine cleanup site was released into the Cement Creek that ran into the Animas River. The local sheriff closed the river for all recreational uses and notifications went to any water systems downstream to close their water intakes. ATSDR reviewed the water sampling results submitted by EPA on August 7, 2015. The samples were collected on August 5 and 6 at six locations along the river. The result indicate a downward trend over time as plume migrates downstream.

For this incident, comparison values represent a concentration of a substance in the environment below which most people would not be expected to experience any harm Concentrations above comparison values are an indicator that further review and assessment is necessary. Comparison values do not predict adverse health effects, nor should they be used for setting clean-up levels.

If toxicity were a room, comparison values would be the "floor". Health effects would not be expected until you reach the "ceiling". The "height" of the room would be the uncertainty factor listed for each substance in these tables. CDC/ATSDR uses the highest quality data available to assess the health implications of environmental data. Common sources include

- ATSDR's Minimal Risk Levels;
- EPA's Reference Doses and Reference Concentrations;
- Acute Exposure Guideline Levels developed by a consortium of professional organizations including ATSDR, EPA, the Occupational Safety and Health

Administration (OSHA), and the National Institute for Occupational Safety and Health (NIOSH);
- Regulatory standards and guidelines developed by recognized organizations [e.g., EPA, the U.S. Food and Drug Administration (FDA), World Health Organizations (WHO), National Academy of Sciences (NAS,)]; and
- Staff reviews of general toxicological information for those substances for which such standards and guidance values are not readily available. Preference will be given to high quality human data over animal data whenever possible.

In some cases, site-specific recommendations for similar contaminants from other sites or spills may be used as the comparison value. Many of these values are given in doses of mass of contaminant per body weight, usually milligram or microgram of pollutant per kilogram of body weight. CDC/ATSDR converts these doses to environmental concentrations commonly referred to as Environmental Media Evaluation Guides (EMEG) using the following assumptions.

- EMEGs are environmental concentration in air, soil, or water below which no adverse non-cancer health effects are expected to occur.
- EMEGs are derived from ATSDR's Minimal Risk Level (MRL), and are expressed for short term or acute exposure durations (up to 14 days), mid-term or intermediate exposure durations (up to a year), and long-term or chronic exposure durations (anything over a year).
- EMEGs are used in selecting environmental contaminants for further evaluation.

CDC/ATSDR refers to comparable comparison values derived from EPA reference doses or concentrations as RMEGs.

EMEG values can be given as a range of values that span the exposure potential for different segments of the population. RMEG values are generally assumed to be lifetime exposures.

For water, EMEGs are calculated from MRLs as:

$$\text{EMEGwater } (\mu g/L) = \frac{(\text{MRL } (mg/kg/day) * \text{Body Weight } (kg))}{\text{Ingestion Rate } (L/day)}$$

EMEGs are calculated with the following assumptions:

	Body Weight	Water Ingestion	Soil Intake
Adult	70 kg	2 l/day	100 mg/day
Child	10 kg	1 l/day	200 mg/day
Pica	10 kg	1 l/day	5000 mg/day

The data cited below by sampling site show levels that exceeded the screening levels

- Site 32nd Street Bridge showed elevated levels of Calcium at 52,200 ug/l dropping to 51,400 ug/l , Magnesium at 7,280 ug/l dropping to 7,120 ug/l , and Sodium at 7,280 ug/ dropping to 7,120 ug/l and a pH reading of 7.4 – 7.09.

- Site A68 showed elevated levels of Calcium at 37,200 ug/l dropping to 36,900 ug/l , Magnesium slightly elevate at 817 ug/l , and Sodium at 1,740 ug/ dropping to 1,720 ug/l and a pH reading of 6.6 – 6.4

- Site A72 showed elevated levels of Calcium at 461,000 ug/l, Magnesium at 6,650 ug/l dropping to 1,160ug/l, and Sodium at 2,600 ug/ dropping to 2,310 ug/l and a pH reading of 4.8 – 6.4. Also elevated levels of Cadmium at 5.3 ug/l dropping to 0.34 ug/l , Copper at 189 ug/l dropping to 1.9 ug/l, Iron 5,840 ug/l dropping to 1,980 ug/l , Lead at 50.7 ug/l dropping to 0.2 ug/l , Zinc at 420 ug/l dropping to 609 ug/l.

- Site Bakers Bridge showed elevated levels of Calcium at 46,500 ug/l dropping to 32,600 ug/l, Magnesium at 2,090 ug/l dropping to 296 ug/l, and Sodium at 1,960 ug/ dropping to 1,790 ug/l and a pH reading of 5.6 – 7.6. Also elevated levels of Cadmium at 15.2 ug/l dropping to 2.1 ug/l, Copper at 2,260 ug/l dropping to 7.6 ug/l.

- Site CC48 showed elevated levels of Calcium at 190,000 ug/l dropping to 156,000 ug/l, Magnesium at 10,900 ug/l dropping to 6,720 ug/l, and Sodium at 3,930 ug/ dropping to 3,690 ug/l and a pH reading of 3.8 – 4.3. Also elevated levels of Cadmium at 30.6 ug/l dropping to 14.2 ug/l , Copper at 189 ug/l dropping to 786 ug/l, Iron at

27,000 ug/l dropping to 20,000 ug/l , Lead at 73.9 ug/l dropping to 30 ug/l , Zinc at 8,540 ug/l dropping to 4,650 ug/l.

- Site Cement Creek 14th St Bridge had only one sampling data set that showed elevated levels of Calcium at 190,000 ug/l Magnesium at 37,100 ug/l , Sodium at 4,960 ug/ , Aluminum at 14.2 ug/l , Beryllium at 34.8 ug/l , Cadmium at 89.3 ug/l Cobalt at 14.2 ug/l , Copper at 10,400 ug/l , Iron at 49,500 ug/l , Lead at 150 ug/l , Potassium at 6,630 ug/l and Zinc at 26,800 ug/l.

The downward trend continues for the sites sampled. Cement Creek 14th street Bridge, only had one sampling event, so a trend could not be developed. The Animas River is an open water source and not considered potable until it has been properly treated, with that said ATSDR expects that people are not drinking the water directly from the river. The sampling collection information identifies areas with an orange discoloration as the areas with lower pH and detected metals. It would be advisable to avoid areas with orange discoloration in the river water. ATSDR does not anticipate adverse health effects from exposure to the metals detected in the river water samples from skin contact or incidental (unintentional) ingestion.

Washing with soap and water after contact with the river water is a sound public health practice to minimize exposure to the metals, and also any bacteria that maybe present in the untreated river water. Anyone who feels illness as a result of exposure to metals or pathogenic organisms in the river water should contact their local health care provider.

ATSDR recommends that additional monitoring should be conducted until the river returns to pre-release levels. If local health care providers have questions they can contact the ATSDR Regional Office at 303-312-7013. ATSDR's Regional Office can arrange a consultation between the health care provider and ATSDR physician.

Additional information about exposure with metals at
http://www.atsdr.cdc.gov/substances/index.asp

ATSDR understands that the EPA is investigating the well water issue and remains available to assists with data interpretation upon request. ATSDR is a public health agency. SJBHD's request for ATSDR to also evaluate exposure concerns associated with livestock and other domestic animals is not within ATSDR's public health purview.

Attached is the sampling data set provided by EPA with the elevated metals highlighted for each sample location.

Prepared by

CAPT Larry F. Cseh, R.S., MSA

US Public Health Service

Emergency Response Coordinator

Agency for Toxic Substances and Disease Registry

DTHHS, ERP

Concurrance

James W. Stephens, PhD

Director

Division of Toxicology and Human Health Sciences

Agency For Toxic Substances and Disease Registry

CDPHE PRESS RELEASE

---------- Forwarded message ----------
From: **CDPHE News** <cdphe.officeofcommunications@state.co.us>
Date: Tuesday, August 11, 2015
Subject: News: Contamination in Animas River continues to decrease

To: cdphe_officeofcommunications@state.co.us

Mark Salley, Communications Director | 303-692-2013| mark.salley@state.co.us

FOR IMMEDIATE RELEASE: Aug. 11, 2015

COLORADO
Department of Public Health & Environment

SAN • JUAN • BASIN HEALTH DEPARTMENT

Contamination in Animas River continues to decrease

DENVER — The Colorado Department of Public Health and Environment reports initial test results on the Animas River show the concentration of contaminants from the Gold King Mine continues to decrease.

"While we know monitoring needs to continue, we are encouraged to see decreasing contamination in the river as shown by our recent analysis," said state health department director and chief medical officer Dr. Larry Wolk. "CDPHE will continue to sample water in Cement Creek and the Animas River daily. We recognize the importance of the Animas River to communities in southwest Colorado and beyond."

The department does not anticipate adverse health effects from incidental or limited exposure to metals detected in the water. However, the department advises people to avoid contact with yellow- or orange-colored water and sediment. Wash skin with soap and water after contact. Please continue to follow the advisories issued by the La Plata County Sheriff's Department and San Juan Basin Health Department. Anyone who is concerned about their exposure should contact their healthcare provider or the Rocky Mountain Poison and Drug Center (1-800-222-1222).

The department continues to take samples to analyze river water, drinking water, sediments and the yellow-orange substance coating the stream banks. Lab results take 24 hours from the time of receipt at the lab. Samples are being flown from Durango to the state lab in Denver, and scientists are working overtime on these prioritized samples.

Samples are analyzed for contaminants typically found in mine drainage, such as pH, hardness and metals. We will post data, recommendations and additional information on our website. CDPHE will continue to coordinate closely with the San Juan Basin Health Department and the EPA.

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